

Furnace Back-flash – Employee Receives Minor Burns



IPS Control: 1128228

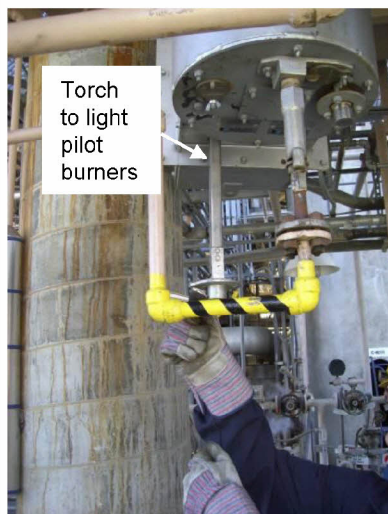
Location:

Richmond Refinery
Richmond, CA, USA

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F-1650 with burner lighting torch

Tenets of Operations Violated:

Tenet 2 – Always operate in a safe & controlled condition

Tenet 8 – Always address abnormal conditions

Tenet 9 – Always follow written procedures for high risk or unusual situations

There's always time to do it right – You are too precious to lose

Incident Description:

On Tuesday, 19 August 2008, there was an back-flash at the Vacuum Stripper Feed furnace for the Heavy Neutral HydroFinisher (HNHF) plant at RLOP. One plant operator received first degree burns and the furnace suffered minor damage.

The furnace had tripped on high fuel gas pressure when plant operators and maintenance personnel were working to repair a VOC leak on a pressure gauge linked to the minimum flow fuel gas regulator. The plant operators made an unsuccessful attempt to relight the furnace. On their second attempt, they lit one pilot and thought the associated burner had also lit. When they inserted a torch to light the 2nd pilot, there was a back-flash.

Investigation Findings:

- 1) The fuel and pilot gas chopper valves were not reset after the high fuel gas pressure trip;
- 2) The design did not allow for the pressure gauge to be repaired without depressurizing the minimum flow fuel gas regulator;
- 3) It is not possible to see the burner being lit from the inspection port because it is blocked by the burner fuel gas valve;
- 4) There is no written procedure for safely restarting this furnace after a furnace trip, and
- 5) The applicable Refinery Instruction does not cover restart of hot furnaces following a furnace trip.

What Worked Well:

- 1) The furnace safety device worked as intended to trip the furnace, and
- 2) Operations called Chevron's Fire Department to gas test the furnace before relighting it.

Recommendations:

- 1) Ensure there is a written procedure or policy guidance for safely restarting furnaces after a full furnace trip.
- 2) Ensure all safety shutdown devices are armed and reset before relighting a furnace after it trips.
- 3) Survey all furnaces to ensure they each have a block valve under the fuel gas pressure gauge, so the gauge can be replaced without affecting the minimum flow fuel gas regulator

Lessons Learned:

- 1) Visually verify that each burner has been lit successfully.
- 2) There is a need for adequate procedural or policy guidance for safely relighting a hot furnace box.
- 3) Consider developing a best PPE practice when lighting a furnace with a propane torch (or similar).
- 4) Survey associated instrument tubing and piping before isolating a system or turning a valve.